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National Trial Inspection at a Single Small-scale Facility

A. INTRODUCTION

During 1989 various countries carried out trial verification inspections on a national basis in their civilian chemical industry and reported the results to the Conference on Disarmament. The majority of these trials simulated routine inspections of chemical plants preparing key precursors currently listed on schedule 2A of the draft Convention on Chemical Weapons. More recently, some states, including the United Kingdom (CD/921) and the Federal Republic of Germany (CD/950), have reported trials of other types of inspections, such as challenge procedures and ad hoc verification and others are underway. Continuing this trend, Canada carried out in November 1989 a practice inspection at a simulated single small-scale facility (SSSF) where small amounts of schedule 1 chemicals have been prepared for protective purposes. The facility used for the trial is located at the Defence Research Establishment Suffield (DRES) in Alberta.

Canada does not possess any production facilities for chemicals currently listed on schedule 1. If such chemicals are needed, they are prepared in a standard organic synthesis research laboratory of the type found at many universities and research institutes. The research laboratory at DRES does not have any large reactors or permanently installed process equipment. Its capacity is limited to bench-scale synthesis. Such a facility would not pose the same threat to the goals of the chemical weapons convention as would a dedicated facility with larger production equipment, perhaps a pilot plant for which the model agreement provisions of the draft Convention (CD/952) seem to have been written. Thus the designation of the DRES laboratory as a single small-scale facility required a specific definition and careful adaptation of the procedures needed for routine inspections.

This working paper presents the results of a Canadian practice inspection held at the DRES research laboratory, part of which was defined as a single small-scale facility for the purpose of this trial.

B. GENERAL APPROACH

1. Aims and Objectives

The practice inspection provided an opportunity to examine and develop inspection procedures as a contribution to the work of the Conference on Disarmament. In addition, it was possible to explore the impact of such inspections on national programs, particularly those involving research into chemical protection, such as are carried out at the Defence Research Establishment Suffield.

The basic aims of the practice inspection were to evaluate the approach to verification at a single small-scale facility as outlined in the then current version of the rolling text (CD/952), to develop its application to a laboratory facility, to determine the problems created for the facility by the verification requirements, and to assess its applicability to this type of facility.

Specific verification objectives of the inspection were to demonstrate:

a) that the declarations made with respect to the facility were consistent with the obligations of the convention.

b) that the quantities of schedule 1 chemicals produced, stored, transferred, or consumed were within the prescribed national limits of 1 metric tonne; and

c) that the reaction vessels used in the facility were not designed for continuous operation and were of a volume not in excess of [10] [100] litres.

The Canadian trial simulated a routine periodic (annual) inspection. It was assumed that previous declarations, agreements, reports, etc., were available. Wherever practicable, this background information was simulated.

2. Relevant Provisions in the Draft Convention

The practice inspection was planned according to the provisions of Annex 1 to Article VI of CD/952, in particular those provisions pertaining to production at a

single small-scale facility. The model for an agreement relating to single small-scale facilities in Appendix II of CD/952 formed the basis for arrangements with the laboratory on access, assistance and additional information to be obtained. Guidance on inspection procedures was obtained from the guidelines for the international inspectorate in the Addendum to Appendix I and the draft protocol on inspection procedures in Appendix II.

3. Identification of the Single Small-Scale Facility

The simulated single small-scale facility involved in the practice inspection was defined as a single research laboratory located in a secure, specially ventilated suite within the main laboratory building at DRES. It was a standard organic synthesis laboratory equipped with five commercially available fumehoods with separate filtration and ventilation systems and a sixth fumehood specifically equipped for the secure storage of highly toxic chemicals. Associated supply systems, external storage areas, ventilation stacks and waste disposal areas were included in the facility description.

4. Type of Inspection

Examination of the provisions of the draft CWC suggested the following sequence of verification events for a single small-scale facility after entry into force of the Convention:

a) initial declaration of the single small-scale facility within thirty days;

b) initial inspection;

c) preparation of the facility agreement;

d) submission of the initial inspection report;

e) annual declarations of projected activities at the facility;

f) annual declarations of activities at the facility in the previous calendar year;

g) advance notification of changes to the facility;

h) routine periodic (annual) inspections; and

i) submission of inspectors' reports on routine inspections.

5. Initial Declaration

A simulated initial declaration was provided by the facility. This comprised: the location and detailed technical description of the facility required by Annex 1 to Article VI; a statement of the quantities of schedule 1 chemicals possessed as of the date of entry into force; and a list of schedule 2A chemicals and their quantities maintained as precursors for schedule 1 synthesis.

6. Initial Inspection

An initial inspection was not held prior to the trial. Instead, a planning group representing the facility, the inspectors, and the National Authority developed the required information over a two-day period prior to the inspection.

7. Facility Agreement

The necessary elements of the facility agreement were worked out during the planning session using as a basis the model for an agreement relating to single small-scale facilities, as outlined in the rolling text (CD/952).

8. Annual Declarations

Prior to the trial, a simulated annual declaration was issued. This was a relatively short document involving a simple update of the information provided in the initial declaration. As a result, material balance verification was straight forward, requiring only the addition of changes resulting from activities between the date of the annual declaration and the inspection.

C. DETAILED APPROACH

1. Dates and Duration

The trial was held during the third week of November 1989 and lasted two-and-a-half working days.

2. Mandate

The mandate for a routine inspection of the single small-scale facility was based on the elements of the facility agreement worked out during the planning session.

3. Composition of the Inspection Team

The inspection team was composed of a representative of the Department of National Defence as team leader, a representative from Canadian industry, and five scientists with a variety of backgrounds and experience. At least two of the inspectors were experienced in the preparation of schedule 1 chemicals, one was a practising analytical chemist, and two were widely knowledgeable in negotiations on the draft Convention.

4. Other Participants

The practice inspection was carried out under the direction of a senior scientific officer assigned from the Department of National Defence. He also played the role of a representative from the national authority and participated as an observer. There were also observers from the Arms Control and Disarmament Division of the Department of External Affairs and from the Arms Control Verification Team of the Department of National Defence.

5. Advance Preparations

In addition to the planning meeting, the inspection team was briefed at a half-day meeting the week before the inspection. All relevant material was supplied to the inspectors and observers in advance. This included information from CD/952 and examples of national trial inspection (NTI) reports previously presented to the CD. This material was discussed at the half-day briefing session.

Accommodation, meals and local transportation were arranged by the facility, and a small conference room was provided as a base of operations for the inspectors.

6. Inspection Equipment

All equipment used in the practice inspection, including photographic and safety equipment, was provided by the facility.

7. Measures to Protect Classified Information

Inspectors were treated in a fashion similar to any visitors to the establishment. They were escorted during all movements within the facility. It was not found necessary for the inspectors to have classified information in order to carry out the inspection. It was also not necessary to remove any equipment from the facility prior to the inspection or to shroud any items. The laboratories were left in their normal working state with no special clean-up prior to the inspection. The inspectors generally met and spoke only to those officially involved in hosting the inspection, providing services, or operating the specific facilities inspected.

8. Opening Conference

An opening conference of one-hour duration was held to provide background briefings in order to familiarize all participants with essential aspects of the practice inspection, as well as to update the declarations and answer questions from the inspection team.

9. Orientation Tour

As this was the first visit to the facility by some of the participants, a thorough tour of all areas of the facility, including remote storage and waste disposal sites, was provided for all inspectors and observers. Due to the distances to the remote sites, over four hours was required. At the end of the tour, an inspectors' meeting was held, at which initial plans were reviewed and revised and assignments made for more specific investigations by groups of inspectors.

10. Preparation Facilities

The preparation facilities for synthesis of organic chemicals were closely examined. There were five fumehoods within the single small-scale facility suitable for toxic synthesis at the levels of schedule 1 chemicals, although it was claimed that only two would normally be used for this work. An additional nine similar individually ventilated hoods were found to be present in other areas of the establishment, although not all had quite the same protective capability. It was clearly observed that systems for continuous operation were not available and that all reaction vessels used in synthesis within the facility were less than ten litres in size. In fact, for safety reasons, glass reaction vessels were normally restricted to five

litres or less, and those used in supertoxic lethal chemical or schedule 1 preparations were restricted to two litres or less in size.

11. Records Audited

The records examined included those showing the preparation, storage and transfer to research programs of all schedule 1 chemicals. Precursor inventories were also examined, as were purchase records relating to operation of the facility.

12. Sampling

Two samples were taken and analyzed in order to test procedures. One was from a container of a schedule 1 chemical in storage and the other from a container of decontaminated waste.

13. Analysis

A wide range of automated analytical techniques were available at the establishment, including infrared, gas-liquid chromatography, high-pressure liquid chromatography, nuclear magnetic resonance spectroscopy and mass spectroscopy. The analytical facilities of the establishment were not included in the single small-scale facility as defined for trial purposes, but full access was provided to inspectors as specified in the facility agreement. The complete range of analytical procedures was made available for use by the inspectors as required. The two samples were analyzed using gas chromatography/mass spectroscopy (GC/MS) and spectra were compared with electronically stored libraries including the NBS library and data from the Finnish blue books. Sampling and analysis of each sample took approximately one hour.

14. Documentation of the Inspection

Still photographs were taken by DRES personnel as required by the inspectors. The photographs included most operations carried out by DRES for the inspectors, e.g. sampling, sample transportation and analysis. Photographs were also taken at the remote locations.

15. Closing Conference

A brief evaluation of the trial involving all participants was held during the closing conference. All outstanding questions were resolved.

16. Anomalies

A few minor discrepancies were identified during the practice inspection, but all were easily resolved. None were deliberately introduced.

17. Report of the Inspection Team

The inspectors' report was largely prepared during the inspection. Some general sections were written by the team leader at the operations base as the inspectors were carrying out specific tasks. Other items were contributed by the groups of inspectors that carried out various aspects of the inspection. The draft report was reviewed by the inspectors prior to departure, with final editing occurring off-site the following week.

18. Impact on Facility Operations

Preparation time for the facility, including planning sessions and preparation of declarations, was spread out over several months and involved mainly the efforts of a single staff member. The practice inspection itself occupied a cross-section of facility personnel for three days and involved the shut-down of a number of programs for the same period. Monetary costs associated with the inspection for the facility were not estimated.

D. RESULTS

1. Definition of the Single Small-Scale Facility

Since a pilot plant or other dedicated production facility for schedule 1 chemicals is not used or available in Canada, the section of the research laboratory at the Defence Research Establishment Suffield used for synthesis of organic chemicals, including schedule 1 chemicals, might have to be identified as a single small-scale facility for purposes of the chemical weapons convention. A description of a single small-scale facility based on this laboratory was prepared following the provisions of the rolling text

(CD/952), but some difficulties were encountered in adapting it to verification procedures.

The laboratory is not used exclusively for the preparation of schedule 1 chemicals. It is a multipurpose organic synthesis laboratory. A wide range of synthetic projects, including the preparation and purification of precursor chemicals, is normally carried out there. The activities of the laboratory also include, however, those which could be considered as functions of an SSSF - i.e., the preparation of schedule 1 chemicals. Thus, it was not possible to isolate the single small-scale facility from these other functions.

No schedule 1 chemicals are prepared within the facility at DRES for other than protective purposes, and none have been transferred out of DRES to other locations, either nationally or internationally. Schedule 1 chemicals prepared in the facility have been transferred, however, to other areas of the establishment for consumption in research programs on chemical protection. For trial purposes, and in keeping with the apparent intent of the rolling text, the remaining sections of the DRES research establishment were not included in the declared single small-scale facility. It might be noted that, if a research laboratory such as that at DRES is declared an SSSF, then movement of schedule 1 chemicals for use in other locations in the research establishment can be considered as a transfer.

In applying the model for an agreement relating to single small-scale facilities to the laboratory setting, it was found that some sections of the model could be adapted without difficulty, while others could not. In many ways, the model was more appropriate for a dedicated facility housed in a separate building.

For instance, in the model under section 1(b), "detailed technical information", requirements for site information including pipework, roads, fences, mains electricity, water and gas points did not apply to the synthesis laboratory, nor did nearly all of the flow and process information requested. The provision of lists of equipment for a laboratory filled with research items was found to be very difficult and, in any event, was judged to be of little use for verification. (Glass reaction flasks, common to all organic laboratories, are expendable items and are not normally recorded in inventories.) In addition, the projected use of monitoring systems, while possibly having some value in a dedicated facility, was judged to be of no value whatsoever in a laboratory where a wide variety of similar but unrelated activities are being carried out. As a result, these sections of the model were disregarded during planning for the trial inspection.

The experience of this practice inspection clearly showed that the characteristics of a single small-scale facility, as set out in Annex 1 to Article VI, and particularly as augmented by the model for an agreement relating to single small-scale facilities, need further clarification for organic research laboratories not dedicated solely to the production of schedule 1 chemicals.

2. Facility Agreements

The contents of a facility agreement were found to be of utmost importance. It must not only contribute to the mandate for the inspection but also spell out rights of access, use of equipment, special inspection procedures, sampling and analysis, rights and privileges of both the facility and the inspectors, emergency measures, etc. It must even direct administrative arrangements, including transportation, meals and accommodation. Guidelines to the preparation of these agreements must therefore be quite clear, and a considerable level of detail must also be included if disputes are to be avoided.

Due in large part to difficulties in adapting the model provided in Appendix II to CD/952 to a laboratory facility, a complete facility agreement was not written for the practice inspection, and some disagreements over detail arose during the trial. The preparation of the agreement will involve considerable negotiation among the inspectorate, the facility management and the National Authority, and could be a time-consuming process. It must be initiated and largely completed at the initial inspection or at subsequent additional visits arranged specifically for this purpose. Until an agreement is signed, subsequent routine inspections will be unnecessarily difficult.

During the preparation of the facility agreement, it was thought useful to transform the models for an agreement into pre-prepared, standardized forms, which could be filled out, as appropriate, during initial inspections to make the work of the inspectors easier. An attempt was made to do this for the single small-scale facility model and seemed to work well. However, in order to make the form complete, some details not found in the model had to be added.

3. Declarations

During the preparation of declarations for the practice inspection, it became apparent that some difficulties exist in the declaration requirements for single small-scale facilities found in Annex 1 to Article VI. At present, there is no requirement to provide

information on the schedule 1 chemicals or their scheduled precursors that are stored at the single small-scale facility at time of the convention's entry into force. It was found that such data are essential in order to provide a baseline for the initial inspection. This would assist in negotiating a facility agreement rapidly, especially regarding requirements for access, frequency of inspections and other aspects of the agreement. The initial declaration should provide most of the information currently required in annual declarations.

In addition to the annual declaration of the previous year's activities after the end of the calendar year, Annex 1 to Article VI requires a separate declaration prior to the end of the calendar year regarding projected activities and anticipated production. The value of this process for a research laboratory is hard to assess because of the difficulty in predicting the needs of research programs for a year in advance. Such information will be inaccurate at best. But it could give rise to apparent anomalies during inspections, leading to unnecessary disputes. This declaration, then, was judged to have no value in the practice inspection, and it is difficult to perceive how such information would assist in verification, except possibly to suggest a need for a change in the frequency of routine inspections. The requirement for this declaration should be deleted for a laboratory facility. Alternatively, a projection of yearly activities and production quantities could be added to the declaration of activities for the previous calendar year, with the understanding that such projections are subject to change.

Finally, a requirement to declare formally the intent to operate a single small-scale facility should be added to the initial declaration in order to make this process complete.

4. Frequency and Duration of Inspections

In a facility where schedule 1 chemicals are produced for legitimate purposes, there will be no need to verify their presence or absence. A similar situation will hold for their precursors. Verification activities will concentrate primarily on confirmation of data contained in the declarations and that the facility is not capable of producing much more than one metric tonne of schedule 1 chemicals per year. In a laboratory adapted to the functions of a single small-scale facility, schedule 1 chemicals will probably be prepared only when needed. The quantities produced should not significantly exceed requirements, and thus the amounts retained in storage could be quite small. The threat posed by such facilities to the Convention should be insignificant, and frequent inspections will not be

necessary in the absence of other information that might increase the level of concern. The Canadian experience would suggest that annual inspections should be appropriate for this type of facility. Only when quantities approach the one metric tonne limit should more intense verification measures be considered.

After the initial visit has been carried out and a facility agreement completed, verification activities during subsequent routine inspections at a laboratory-type single small-scale facility should be straightforward and brief. Although the practice inspection took two-and-a-half days to complete, much of this time was required because activities were being attempted for the first time. It was estimated that a repeat inspection could be carried out in one working day or less by a team of experienced inspectors.

5. Travel Time

For the practice inspection, the inspectorate was not required to bring equipment so that travel by commercial transport was considered to be appropriate and cost effective. Most of the inspectors left their homes in Eastern Canada early in the morning (equivalent to point of entry), used a commercial flight to Calgary, and then proceeded to Medicine Hat by ground transport provided by the facility. Arrival was late in the afternoon. No inspection activities were possible during the evening and night hours when the facility was closed. The inspection officially commenced the following morning after the opening meeting. The time period from departure in the East to initiation of the inspection was about twenty-six hours. This was under good conditions, with no delays en route (although the road from Calgary was closed by a snowstorm shortly after the inspectors had passed). Few other timing options were available using commercial air travel; a reduction of the time involved would have required night time travel, highly expensive dedicated aircraft, or night operations. This experience illustrates the difficulty in attempting to adopt procedures designed to shorten the warning time for surprise inspections and the potentially high costs of such measures.

6. Inspection Team

A total of seven inspectors were utilized for the practice inspection. This was a larger group than would normally be needed for a routine annual inspection at a single small-scale facility of this type following completion of the initial inspection and the inspection agreement. Five inspectors would be adequate, or even four if the team leader could also act as an inspector. The

development of standard formats for reports would help ease the burden. It was agreed that inspectors should operate at least in pairs in order to provide corroboration of all observations, although the team leader could pursue some functions alone at the operations centre.

For the inspection of a single small-scale facility, the practice inspection showed clearly that the inspection team must possess a variety of skills. At least one must be highly knowledgeable in sampling and analytical techniques, and one or more should be thoroughly trained in areas related to record keeping, bookkeeping and purchasing procedures. Others should be skilled in organic chemistry or in process engineering. Knowledge of general practices in organic synthesis laboratories is essential, and similar knowledge about pilot plant processes would be desirable.

The inclusion of support services with the inspection team must be considered. During the practice inspection, all such services were provided by the facility. However, in a real international inspection, this may not be possible or desirable. It could be necessary to have interpreters as part of the inspection team. The inspectors should have the authority to record photographically or otherwise the inspection process, and portable computers should be available to prepare records and reports.

Guidelines for the composition of inspection teams in terms of numbers, skills, training and experience should be worked out during the preparation period.

7. Inspection Equipment

The practice inspection indicated that very little equipment would be needed for routine inspections at a single small-scale facility. If the facility is located at a laboratory, adequate analytical facilities and safety equipment should be available. The trial showed that such facilities and equipment could successfully be used for verification so long as a proper relationship exists between the inspectors and the facility. Requirements would be determined at the initial inspection and spelled out in the facility agreement. Photographic and video equipment must be under the control of the inspectors and may have to be brought with them. A portable word processing system and small printer for preparing reports would also be useful.

8. Security of Information

During the practice inspection, there was no hesitation on the part of the facility management to allow access by the inspectors to all areas relevant to

verification of the single small-scale facility, including neighbouring laboratories with similar fumehoods, roof stacks, waste disposal areas, analytical facilities, storage facilities and remote field sites. The tour and other inspection procedures involved a thorough examination of the areas visited; however, because it was a typical laboratory, there was little to be seen that was unique or sensitive, and the consequences of these intrusive measures were not found to be controversial.

Photography was found to be most important for recalling observations; however, in some states or facilities, photo and video records may be considered sensitive if taken outside the facility. It may be necessary to store such records at the facility in secure sealed cabinets between inspections, but they would normally be most useful to inspectors during preparations for the next inspection. Arrangements with the facility management for the handling of photographic records must be included in the facility agreement.

Generally little or no classified information was found to be exposed during the practice inspection of the simulated single small-scale facility. No classified commercial information was involved. (The main point at which classified information could have been divulged would be through examination of the purposes for which the schedule 1 chemicals prepared in the facility were used.)

9. Production Capacity

The determination of production capacity was found to be a key element in verification at the facility. In practical terms, the factors which limit the quantities of schedule 1 chemicals made in a synthesis laboratory are the number and quality of the fumehoods and the size of the reaction vessels that can be used in them. From information provided in the initial declaration, and given the safety regulations in force, it could be calculated that the maximum yearly production from a full-time, dedicated process in the facility would be no more than sixty kg per fumehood. It was apparent that this type and size of facility was not a significant threat to the objectives of the Convention. Further verification then became a simple matter of confirming the data provided in the declarations.

With reference to Annex 1 to Article VI and the size of reaction vessels, the capacity of vessels used in a research laboratory-type facility could easily be restricted to ten litres, although the DRES facility uses vessels of considerably smaller capacity. Typical pilot plant vessels, as might be used in a dedicated facility, however, can range up to several hundred litres. A one-hundred-litre limit

imposed on them might be inconvenient, but it could probably be accepted. A facility with vessels of this size would pose a much more serious risk to the Convention, especially if several such vessels were available. Inspections would need to be more frequent and at unpredictable times with a minimum of warning. Sampling and analysis of waste products could become important for verification. The purchase or possible synthesis of precursors would have to be monitored carefully. A trial of a dedicated single small-scale facility, possibly a pilot plant, should one be available somewhere, would be most useful in testing these factors.

10. Production Quantities

Perhaps the most useful means of monitoring production quantities would be through inventory control of precursor chemicals. As most precursors are obtained from commercial sources, all schedule 1, 2 or 3 precursors coming into the facility should be identifiable by quantity and lot number. Usage of these precursor chemicals at the facility should be recorded by lot number, quantity and date. A similar record should be maintained by the facility when precursor chemicals are prepared on-site or obtained from non-commercial sources. These procedures would allow a running balance to be maintained, and the information could be compared with data from commercial sales. In industry, a system of audit trails for chemicals is normally required by law; similar procedures could be required for single small-scale facilities under the chemical weapons convention. In view of the adoption of Laboratory Information Management Systems (LIMS) by industrial laboratories, this might form a model for a system to be used in single small-scale facilities as a means of aiding verification.

11. Sampling and Analysis

During the practice inspection, it became apparent that the taking and analysis of samples at a single small-scale facility may add little useful information to the verification process. Schedule 1 chemicals and their precursors were legitimately present and required only a few random checks to confirm their identity. However, it was considered essential that the inspection team retain the right to have any sample it wished analyzed, either on-site or at a designated laboratory. Procedures for sampling and analysis must be clearly spelled out in the facility agreement.

One possible role for sampling at a single small-scale facility would be to demonstrate, by the analysis of waste products and possibly air and soil samples, that larger quantities of undeclared schedule 1 chemicals had not

been prepared recently at the site. For instance, it was observed that waste water from DRES (including that from the single small-scale facility) was delivered directly to an isolated two-pond lagoon purification system. While samples were not taken from the lagoon during the practice inspection, it was estimated that analysis of the water would likely show the presence of degradation products if militarily significant quantities of schedule 1 chemicals were being prepared in the facility. Baseline measurements, however, would be required.

All sampling and analysis for the practice inspection was carried out by facility personnel. To overcome the possibility of deception, an identifying "spike" was added by the inspectors and the process observed continuously. Thus, if done with care, samples can be taken and accurately analyzed by the facility. However, it was also quite apparent that without the presence among the inspectors of an analytical chemist thoroughly knowledgeable in the techniques and equipment being used, the inspectors would not have been aware of any inaccuracy in the analytical results, should the facility scientists have attempted a cover-up.

This problem might have been partially overcome by the removal of samples to neutral off-site laboratories for analysis. Apart from the extra skills, time and effort required, the transport of highly toxic samples is a hazardous process and should be avoided if possible. Nevertheless, there must be the capability for removal of samples off site. Analytical equipment could have also been brought to the site by the inspectors, but this should be done only if cost effective. This would seem to be unlikely for the few samples that may be needed during a routine inspection of a single small-scale facility. The use of analytical instruments belonging to the facility would appear to be the best option despite the opportunities for deception.

12. Inspection Report

An extensive inspection report did not appear to be needed, at least insofar as routine verification of a single small-scale facility of this type is concerned. The initial report might be more extensive, but once it is agreed that the facility is in compliance, for subsequent annual inspections, reports should deal mainly with confirmation of declared data and the effects of any changes at the facility. In most instances, it should be possible to report on these in a few paragraphs.

Inspectors, as they gain experience, can be expected to develop standard formats to shorten the

reporting process. This should, in most circumstances, allow completion of reports before the inspectors leave the facility. It should be possible to arrange a series of trial inspections at various types of sites so that the newly formed international inspectorate can gain experience and work out the most suitable approaches to procedures, the preparation of reports, and the development of facility agreements.

E. CONCLUSIONS AND RECOMMENDATIONS

The Canadian practice inspection successfully demonstrated the feasibility of carrying out routine verification inspections at a single small-scale facility preparing schedule 1 chemicals for protective purposes without compromising sensitive or secure facilities, equipment or operations. All aims of the trial were achieved, although some difficulty was encountered in adapting the single small-scale facility model to a research laboratory site. The practice inspection was sufficiently realistic to test the practicality of inspection procedures, and the results provide excellent guidance for further negotiation of the draft Convention on Chemical Weapons. A number of factors emerged that illuminated practical features of the inspection procedures. Some of the results bore directly upon entries in the current rolling text (CD/952), suggesting useful modifications and improvements.

Based on the results of the Canadian practice inspection, the following recommendations can be made for changes or improvements in procedures that may affect the rolling text.

a) The characteristics of a single small-scale facility set out in Annex I to Article VI and developed further in the model facilities agreement in Appendix II are not entirely appropriate for a facility which consists of a multipurpose organic synthesis laboratory. Further trials of such facilities are required, especially at dedicated sites, and the model for an agreement relating to single small-scale facilities should be reviewed. Pre-prepared forms for facility agreements could simplify the work of inspectors and should be developed.

b) The proposed installation of on-site monitoring systems, while perhaps having some value with respect to a dedicated synthesis or pilot plant facility, is not relevant to a multipurpose laboratory facility. This concept should be reviewed as to its being mandatory.

c) The initial declaration for a single small-scale facility should include a declaration of intent to operate such a facility, as well as most of the information

currently required for annual declarations. In particular, it should include a statement of the quantities of schedule 1 and schedule 2 chemicals possessed as of entry into force of the Convention, in order to provide a basis for the initial inspection and preparation of the facility agreement.

d) The requirement to submit annually a separate declaration regarding projected activities and anticipated production is unnecessary for a multipurpose laboratory facility. This provision should be modified.

e) A laboratory-type single small-scale facility would pose a much less serious risk to the Convention than a dedicated facility and would therefore require less frequent inspection.

f) Guidelines are required for the composition of inspection teams in terms of numbers, skills, training and experience. These should be worked out during the preparation period.

g) The most useful means of monitoring the quantities of schedule 1 chemicals produced at a single small-scale facility may be through inventory control of precursor chemicals. A system of audit trails for chemicals and laboratory information management systems should be adopted by the facility managers to assist in verification.

h) A series of trial inspections at various types of sites should be arranged to gain experience and work out the most suitable approach to implementation of verification procedures.